

CLAIMS

1. Mixed micelles or micro-aggregates for inducing an immune response containing at least :

- a first lipopeptide comprising at least one CTL antigenic determinant and at least one lipid unit, and
- a second lipopeptide comprising at least one helper T antigenic determinant and at least one lipid unit, which may be of a different type from the first lipopeptide unit.

2. Micelles or micro-aggregates according to claim 1, characterized in that the lipopeptides independently comprise one or more C_4 - C_{18} lipid units.

3. Micelles or micro-aggregates according to one of claims 1 and 2, characterized in that the lipopeptides independently comprise one or two C_4 - C_{18} lipid chains linked by a covalent bond to one or two amino acids of the peptide part.

4. Micelles or micro-aggregates according to one of claims 1 to 3, characterized in that the lipid units of the lipopeptides are composed of two palmitic acid chains linked to the NH_2 groups of a lysine.

5. Micelles or micro-aggregates according to one of claims 1 to 4, characterized in that the lipid units of the lipopeptides independently comprise a residue of palmitic acid, 2-aminohexadecanoic acid, oleic acid, linoleic acid, linolenic acid, pimelautide, trimexautide, or a derivative of cholesterol.

6. Micelles or micro-aggregates according to one of claims 1 to 5, characterized in that the non-lipid part of the lipopeptides, comprising the antigenic determinants, comprises between 10 and 100, and preferably between 10 and 50 amino acids.

7. Micelles or micro-aggregates according to one of claims 1 to 6, characterized in that the helper T antigenic determinant is a multivalent antigenic determinant.

8. Micelles or micro-aggregates according to one of claims 1 to 7, characterized in that the helper T antigenic determinant is the peptide 830-843 of the tetanus toxin with the following sequence:

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9. Micelles or micro-aggregates according to one of claims 1 to 7, characterized in that the helper T antigenic determinant is the antigenic determinant of hemagglutinin or the PADRE antigenic determinant.

10. Micelles or micro-aggregates according to one of claims 1 to 9, characterized in that the lipopeptides comprise at least one CTL antigenic determinant of a specific protein of melanoma, of a protein from HIV, from HBV, from papillomavirus, or protein p53, or a specific protein of *Plasmodium falciparum*.

11. Micelles or micro-aggregates according to one of claims 1 to 10, characterized in that they comprise the following lipopeptides:

GAG 17	EKIRLRPGGKKKYKLKHIVK(Pam)-NH ₂
GAG 253	NPPIPVGEIYKRWIILGLNKIVRMYSPTSILD K(Pam)-NH ₂
POL 325	AIFQSSMTKILEPFRKQNPDIVIYQYMDDLY K(Pam)-NH ₂
NEF 66	VGFPVTPQVPLRPMTYKAAVDLSHFLKEKGGL K(Pam)-NH ₂
NEF 116	HTQGYFPDWQNYTPGPGVRYPLTFGWLYKL K(Pam)-NH ₂
TT	Ac-QYIKANSKFIGITELKK K(Pam)-NH ₂

12. Micelles or micro-aggregates according to one of claims 1 to 10, characterized in that they comprise the following lipopeptides:

LSA3 CT1	LLSNIEEPKENIIDNLLNNIK(Pam)-NH ₂
LSA3 NRI	Ac-DELFNELLNSVDVNGEVKENILEESQ K(Pam)-NH ₂
LSA3 NRII	Ac-LEESQVNDIDFNSLVKSVQEQQHNVK(Pam)-NH ₂
LSA3 RE	K(Pam)VESVAPSVVEESVAPSVVEESVAENVVEESVAENV-NH ₂

13. Use of micelles or micro-aggregates according to one of claims 1 to 12 for the production of a drug or a vaccine for inducing a specific immune response.

14. Use of micelles or micro-aggregates according to one of claims 1 to 12 for the production of a drug or a vaccine for inducing a specific immune response against HIV, HBV, papillomavirus, p53, melanoma or malaria induced by *Plasmodium falciparum*.

15. Pharmaceutical composition characterized in that it comprises a pharmacologically effective dose of micelles or micro-aggregates according to one of claims 1 to 12 and pharmaceutically compatible vehicles.

16. Drug or vaccine characterized in that it comprises micelles or micro-aggregates according to one of claims 1 to 12.

17. Method for producing micelles or micro-aggregates according to one of claims 1 to 12, comprising the following steps:

- dispersion of each of the constituent lipopeptides in a solution of concentrated acetic acid of about 80% concentration then
- mixing the solutions thus obtained.

18. Method according to claim 17 characterized in that the production of a dispersion of the lipopeptides dissolved in acetic acid is controlled by the two-dimensional nuclear magnetic resonance method.

19. Method for inducing an immune response against a particular antigen comprising at least the administration of micelles or micro-aggregates according to one of claims 1 to 12 to an individual for whom such a response is desired.

20 Method of immunization against a pathogenic agent comprising the administration of micelles or micro-aggregates according to one of claims 1 to 12 to an individual for whom such an immunization is sought.

21. Method according to one of claims 19 and 20, characterized in that the pathogenic agent is HIV, HBV, papillomavirus, melanoma or *Plasmodium falciparum*, and the antigen an antigen of one of these agents, or p53.

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